

ABSTRACT OF THE DISCLOSURE

A device for collection of energy from mechanical disturbances and distribution of that energy to an electrical load. A transducer converts mechanical energy in the form of forces and displacements into electrical energy in the form of charge pulses. The charge pulses are rectified into a Direct Current (DC) power signal and accumulated and stored in an input storage element. A controlled conversion circuit assures that the voltage on the storage element is maintained within a predetermined optimal range for energy harvesting from the transducer, avoiding the application of peak voltages. The controlled conversion circuit can be hard wired and/or controllably adjustable to match a given disturbance characteristic. Only when the voltage is within the optimal range for a given type of disturbance will the controlled conversion circuit enable a DC/DC converter to further convert the stored energy to a voltage that is coupled to an output storage element. This technique optimizes power conversion by controlling the high voltage to low version conversion process by, for example, sensing the disturbance with external sensor or internal voltage of the system, and then using this information about the disturbance to control how and when the electrical conversion process will occur.